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(64.4° C.)

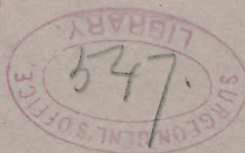
BY

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HYPERTHERMY IN A MAN UP TO 148° F. (64.4° C.).

BY A. JACOBI, M.D.,
OF NEW YORK.

EXCESSIVE temperatures of the animal and human bodies have been studied both experimentally and clinically. Naunyn and Quincke (1869) crushed a dog's cord and found the normal temperature of 40° C. raised the next morning to 42.3°. Many observers found hyperthermy when bulbus and mesocephalon were hurt. Guyon (1893) noticed the temperature to rise 12 times in 25 experiments, when the nucleus caudatus; 13 times in 26, when the optic thalamus; 10 times in 19, when the corpus callosum was injured. The inconsistency of such observations is the more striking, the more we are told that whenever the increase amounted to 1° or 2° C. the stiletto was found to have touched the wall of a lateral ventricle.

According to H. C. Wood (*Fever: A Study in Morbid and Normal Physiology*. Smithsonian Institute, 1880, p. 254), the only nerve-centre proved to exist, capable of influencing the heat-production without affecting the general circulation, is situated in the pons or above it, and whilst it may be a muscular vasomotor centre, it is more probably an "inhibitory heat-centre." Of whichever nature it may be, it must act through subordinate centres situated in the spinal cord.

Clinically, high temperatures have been observed in lesions of the bulbo-cervical cord, in tetanic muscular contractions, in insolation, and in infectious diseases. As early as 1837 Brodie met in fracture of the spine over the cervical cord with 43.9°, Billroth with 42.2°, Simon with 44°, Frerichs with 43.8° (Hermann's *Handb. d. Physiol.*, iv., 2, p. 436.). Ch. Richet publishes (*La Chaleur Animale*, Paris, 1889) a collection of high temperatures with their results; there were 6 traumatisms of the nervous system, with a temperature of 42.2°–43.9°, all of which died; 19 convulsive diseases with 42°–44.75°, with as many deaths; 6 sunstrokes of 42.7°–44° C., 2 of which



recovered. One of these is a case of Atzembach's at 43.6° C., the other of Seguin's at 42.8° , both recorded by the latter (*Thermometry*, 1864). In Richet's list of infectious diseases we notice intermittens with 44° C. observed by Alvarenga and Hirtz, and exceptional cases of scarlatina at 42° , which did not die. The latter observation I have personally made a few times in forty years.

The death-limit appears to be from 4° to 5° C. above the normal, no matter whether the excessive temperature is the result of pathological processes or of experiments. Most of the latter consisted in exposing animals to dry or humid heat, the latter of which is more fatal. Mammifera die at 44° – 45° (but few dogs ever survived at 45° , 40°), birds (with a normal temperature of 45° C.) at 48° or 50° , fish at 37° or 39° . The cause of death is coagulation of the muscular fibre of the left ventricle, and the post-mortem appearances are: Pleural, subpericardial, and pulmonary hemorrhages; congestion of all viscera and a contracted and empty left ventricle.

These observations on temperature elevations do not compare, however, with a small number of such as furnish the most striking surprises to the observer for two reasons: 1. For their heights; 2. For their relative innocuousness.

Dr. G. N. Philipson (*Lancet*, April 24, 1880) has the following case: A female, domestic, aged twenty-three years; had a hard life, rheumatic fever three years before admission, indulged in narcotics, spirits of camphor, cologne, in fact, anything alcoholic, and chlorodyne for a change; was in bed three weeks during 1877 because of pain and fainting-spells; was sensitive, excitable, and had intestinal and muscular neuralgia, also amenorrhœa, and suffered from a dry, hot skin alternating with profuse perspiration. She was admitted July 4, 1879.

July 7th. P.M. 101° F.

9th. P.M. 112° .

10th. A.M. 112° .

11th. P.M. 101° .

Through three days she had 101° – 103° .

On the 16th. P.M. 111° F.

18th. A.M. 100° ; P.M. 112° .

24th. Left axilla 117° ; right 110° ; mouth 102° .

During all these temperatures both pulse and respiration were

changed. She had to be discharged, not being well yet, but was known to look well in September.

The *Med. Times and Gaz.*, April 24 and May 1, 1880, contains the following case of Dr. James Little: A woman, aged twenty-three years, fell on her head, and developed cerebro-spinal symptoms. Getting well she had the following week a normal temperature. Then suddenly, on April 19th, her axilla temperature was 115° . Deferescence was rapid. The same temperature was noticed 5 A.M. the following day; a few hours afterward temperature was 99.4° ; on the evening of the 26th, 125.6° . In her case the high temperatures were ushered in with a severe headache, and terminated in profuse perspiration.

Dr. Graham Steele publishes (*Lancet*, 1879, p. 271) the case of a female, hysterical, with a temperature of 116.4° .

Mr. John W. Teale (*Lancet*, March 6, 1875, and *Brit. Med. Journ.*, January 24, 1880) reported a case in February, 1875, before the Clinical Society of London. A lady fell from her horse and suffered from serious spinal injuries. For sixty days she had a temperature of 108° to 122° and more, and finally recovered. The measurements were taken with the greatest of care, while awake or asleep, during day and night, under the arm and in the rectum.

Dr. Horatio Donkin has the case of a female nurse, aged nineteen years (*Lancet*, 1878, p. 678; March 15, 1879; *Brit. Med. Journ.*, December 20, 1879), who, in an enteric fever, developed a temperature of 111° . These temperatures were not persistent; indeed, changes set in very rapidly. Her pulse and respiration never changed much from their normal relation of 4.5:1; her mind was not clouded, she was simply hysterical, and complained of pain mostly on her left side. The temperatures were taken with the greatest of care, with several thermometers, and under the eyes of several observers.

In the same paper (*Brit. Med. Journ.*, October 20, 1879) Dr. Donkin refers to previous cases, either published or unpublished. Dr. Greig Smith (*Lancet*, March 15, 1879) has the case of a girl, aged nineteen years, emotional, and with ovarian tenderness and frequent flashes, exhibiting temperatures of from 108° to 104° , with sudden changes—within ten minutes—down to 99° . Dr. Ormerod (*Lancet*, November 9, 1878) relates the case of a woman, aged thirty-two years, emotional, hyperæsthetic, excitable, with a temperature of 115.2° .

Mr. J. Cæsar (*Lancet*, June 14, 1879) has the case of a girl, aged fifteen years, who during an attack of enteric fever with double pneumonia exhibited a temperature of 113.1° , during which she was unconscious. An oral communication of Dr. Cheadle to Dr. Donkin refers to a girl, aged eighteen years, who, a month after an enteric fever, showed a temperature of 111° ; one of Mr. Davis to a man, aged thirty-four years, who had a synovitis of the knee and was treated with the actual cautery. He had very severe pain and a temperature of 112° , and another time of 110.4° , which fell to 100° within twenty-five minutes.

There is finally an oral communication to Dr. Donkin by Dr. Roddick, of Montreal, referring to a temperature of 117° , and probably more (the thermometer registered only that temperature).

In all of these cases the high temperatures did not exhaust the patients; perhaps, because in several instances it was found that they changed rapidly, and were not equally distributed over the whole body. Even as early an observer as Wunderlich has noticed the localization and inequality of temperatures.

Dr. Stephen MacKenzie reported before the Clinical Society of London (*Lancet*, November 5, 1881) the case of a woman, aged forty-two years, observed by Mr. Rivington and himself, with temperatures of 108° – 112° , which disappeared after some dead bone had been removed. He believes, however, that these temperatures were fraudulent, suspecting the woman, who was hysterical and tricky. But Mr. W. H. C. Newnham (*Lancet*, November 19, 1881), in a letter to the editor, writes that he was medical ward-clerk at the time and on two occasions he "took evening temperatures of 109° and 111° in the left axilla. He was sitting on the bed holding the thermometer, with fingers in the axilla and with the other hand holding the patient's arm, so that there was not the slightest amount of friction."

These cases are referred to in a careful and elaborate paper published by J. H. Bryant, M.D., in *Guy's Hospital Reports*, vol. I., London, 1894, on "One Hundred Cases of Hyperpyrexia." The author adds a few more (p. 432), some of which he does not appear to believe to be above suspicion.¹

¹ He also quotes the Journal of the American Medical Association of March 21, 1891, which contains the report of a case—female—by Dr. W. J. Galbraith, in which the doctor registered a temperature of 151° F., the nurse one of 171° . I am credibly informed, by high authority, that the woman afterward admitted of shamming and fraud.

In a correspondence published in the *Memphis Medical Monthly* of October, 1891, Dr. Heber Jones sums up his case of hyperpyrexia (highest temperature observed 157° F.—observations frequently interrupted by the bursting of thermometers and the impossibility of quickly procuring others with high enough registers—actual temperatures taken 138° , 150° , 157° F., with rapid changes, May 4th, exhibiting at 4 P.M. 138° F., at 6 P.M. 152° , at 7 P.M. 98°) in the following words:

“Patient, a remarkably bright girl of fifteen summers, not of a nervous temperament, having menstruated perfectly normally for more than eighteen months, having enjoyed average health all of her life, began with a tonsillitis which was never severe, and lasted only about a week, developed without any known cause this extraordinary range of temperature, which lasted about six weeks, having had from one to three paroxysms each day, the paroxysms lasting at first about three hours, and gradually growing shorter, until toward the last the temperature went from normal to the top of a Hicks thermometer in a few minutes, and declined to 96° in almost an equally short time. During the paroxysms the subjective symptoms were intense: coldness, requiring half a dozen blankets, bags of hot water, etc.; nausea, and at times vomiting. She also complained of ‘numbness,’ beginning in the face and extending to the body. The objective signs were pallor and lividity of face and extremities, these appearing cold, and the body warm but not hot. The tongue was generally coated but rarely dry. The pulse never ran over 120, and generally under 100. The urine was normal, examined both chemically and microscopically, and nothing worthy of note found. Digestion impaired, bowels inclined to constipation, but no serious trouble; menstruated normally during the attack. At times, some tenderness in splenic and hepatic regions. At one time developed considerable tenderness in right iliac and along the ascending colon—lasted about a week. Convalescence rapid, and she has since enjoyed perfect health, but recently has had an intermittent fever of rather mild type, and has developed no unusual symptoms.”

Dr. Jones was called April 12th, and noticed the first high temperature on April 16th (109° F.), the last May 30th. During the tests a large number of thermometers were broken owing to rapid expansion of the mercury. It is unnecessary, but still just, to add that Dr. Heber Jones’ standing as a medical man and a gentleman is of the very highest in his community, and that a dozen physicians and nurses were observers to the facts narrated.

Mr. Alfred Stanley publishes (*British Medical Journal*, May 25, 1895) the case of a lady of thirty years, whom he was called to see on February 12th. He found a pleuro-pneumonia of the base of the left

lung. Temperature at 10 A.M. 102° , at 1 P.M. 110° , at 2.30 P.M. 114° . Thirty grains of antipyrin were given. Temperature at 5 P.M. 104° ; on the 13th and 14th, 99° – 100° ; on the morning of the 15th again 114° ; since which time she had an undisturbed recovery. During the high temperature the pulse remained at from 84 to 96. There was no pain and no delirium, but she complained during the heat of loss of sensation in hands and feet. Hot poultices were complained of as being too cold.

In regard to the English cases published up to 1889, Richet (*Chaleur Animale*, p. 110) says:

"Teale and MacKenzie express the opinion that there is no possibility of a fraud in their observations. Still, though one ought to be slow in denying, we do not feel justified in admitting temperatures in excess of 46° C. (114.8° F.) to be true. We do not say they cannot be observed; but hitherto there has not been any authentic and unimpeachable observation. It is to be feared that the confidence of Teale, MacKenzie, and Brine has been deceived. It seems this sort of fraud is quite a special habit of certain English patients, and until either on men or women most rigorously watched, temperatures of more than 46° C. will have been noticed, we shall not be able to accept them as true."

To the list of the gentlemen named by Richet I add Donkin. They do not "express an opinion that there is no possibility of a fraud in their observations," they prove it. Different thermometers were used, in different localities of the body, day and night, during waking and sleeping by different observers, in the presence of others. In the face of these facts, verified as they are by the positive and circumstantial statements of the observers, it does not appear justified on the part of Charles Richet, high as he is, or because he is, in the esteem of the medical world, to add the slurring remark: "It is important to eliminate some temperatures reported in English journals, which seem to be the results of error or fraud." I am afraid the following case will shock his skepticism more than the rest. Its history has been carefully taken by Dr. J. A. Bullinger, the house-physician of the German Hospital, New York, whose indefatigable and painstaking services I take great pleasure in here acknowledging. But for the constant watchfulness of that gentleman, the following notes would not have been so full and explicit:

Aug. Fred. Franz H., of Magdeburg, Germany, fireman, aged twenty-nine years, was admitted to the German Hospital, New York, January 5, 1893, and ran away at 4 A.M., March 13th.

History.—Family history negative; patient himself claims never to have been ill. On October 26, 1892, while employed on steamer "Heligoland," plying between Hamburg and New York, and at work on top of a walking-beam of an engine in motion during a storm at sea, he was thrown, and fell between two massive iron rods revolving in opposite directions. When picked up he was found unconscious, and remained so for about four days. He was told afterward that immediately after the fall blood escaped through his mouth and nose. When he regained consciousness he felt pain in his left lower thoracic region, was short of breath, coughed now and then, and threw up small pieces of dark, coagulated blood. Pain increased by deep inspiration and on coughing. Patient claims to have lost consciousness several times subsequently and was kept in bed and constantly watched by sailors while at sea. Spitting of blood and cough continued, but decreased in frequency. Several days later, when the steamer arrived in port, he was put ashore and told to go to a hospital; feeling well enough, he walked to the Long Island College Hospital, where he was admitted on October 11, 1892; he ran away on October 14th.

To-day he complains of slight pain in his head and in the lower part of chest. Admits three attacks of gonorrhœa; denies having had syphilis. His history appears to be that of a fairly healthy and muscular, but nervous, moody, excitable, and sometimes violent man.

Present Condition.—A well-nourished and very well-developed muscular man. On anterior surface of his left forearm there are three comparatively recent scars about two inches long, which resulted from cuts received during a personal encounter about six weeks ago. An open wound is found at about the middle of the outer side of the left arm, one-half inch in diameter, in a neglected condition and discharging pus. On the right side of the anterior chest wall two inches below the clavicle there is a similar wound, surrounded by an inflamed and elevated area about two inches in diameter. It discharges pus, and pressure on the inflamed area shows an increased discharge. Patient claimed that these two wounds were the result of hypodermic injections made by the captain of the vessel while the patient was unconscious. There are no other marks of violence on the body. Pressure over the eighth and ninth ribs in the axillary line is painful; also pressure upward in the left hypochondriac region. Pain is not localized on palpating ribs and crepitus cannot be obtained. Inguinal glands on both sides are enlarged, but not tender. Cervical, cubital, and axillary glands also slightly enlarged. No marks of pigmentation are found on the body. Expectoration consists of mucus mixed with small pieces of dark, coagulated blood.

Apex-beat in fifth intercostal space to the inner side of nipple-line. Cardiac dulness not increased. Auscultation negative. Lungs, liver, spleen, and abdominal organs generally negative.

Jan. 6th. During the night the patient was found unconscious. Pricking with a pin, pressure, or pinching anywhere did not cause any response. Corneal reflexes abolished. Skin not reddened and does not differ in any way from the normal. Breathing very shallow and accelerated at times, up to 42

per minute; diaphragmatic breathing then seems to be suspended. At times the breathing becomes more deep and less frequent, 18 per minute; diaphragmatic breathing sets in again. Pulse full and strong and perfectly regular. Pupils contracted. Muscular system entirely relaxed. This unconsciousness lasted from about 1 A.M. until 6, when patient awoke, apparently none the worse for the occurrence. Temperature during unconsciousness was not taken, but at 6 A.M. was 99.4°. Patient complains to-day of an indistinct headache, not localized. Appetite good. No sensory or motor disturbances during the day. Ordination: calomel 1.0.

7th. At about 8 o'clock last night patient passed into another stupor, with symptoms similar to those recorded the night before. Respiration was slow, ranging below 15 per minute, breathing being thoracic and abdominal; inspirations deep and full. Unconsciousness complete; no response to irritation anywhere. Pulse varied in frequency between 75 and 80. Temperature rose to 102.5° at midnight; at 4 A.M. 99.0°. A little before 4 A.M. patient recovered consciousness and at first appeared somewhat dazed, asking where he was and what had happened to him during the night. When spoken to, he answers rationally, but it seemed to take him a little while to connect his thoughts and to understand why he is in a hospital. Yesterday, during the day, the spitting of dark coagulated masses of blood continued, while to-day it has diminished somewhat. Patient coughs but little, and no longer complains of pain in his side. Lungs present nothing abnormal. Bowels have moved during the night and to-day. Headache still continues. Ordination: Leeches to septum nasi and both mastoid processes. Potass. iod. 0.5 every two hours. About an hour before the application of the leeches patient became unconscious. Nothing irregular was noticed in his breathing. Pulse still full and strong and perfectly regular. Pupils contracted and did not react readily. The application of the leeches does not disturb the patient, nor does a small incision enlarging wound in chest wall, nor the scraping of both suppurating wounds in chest wall and left arm; this is followed by the application of moist dressings (sublimite 1:3000).

8th. Patient slept last night from 9 P.M. until 4 A.M., then passed into a stupor, waking at about 7 A.M. After that, with the exception of a severe headache, the patient felt fairly well. No change in temperature, pulse, or respiration. Pupils contracted.

9th. At 8 P.M., yesterday, patient had a general convulsion, during which frothy and bloody mucus came from his mouth. Mouth was tightly closed. Upper extremities seemed more active than the lower. Conjunctival reflexes were abolished. Convulsion lasted for several minutes, and after it patient fell into a stupor, during which muscular twitchings were observed. Twitchings at times general and sometimes confined to groups of muscles. Upper extremities and face seem to be involved more than the rest of the body. Pupils contracted and equal. Jaws are firmly closed. Breathing shallow and through the nose. No cyanosis. Face flushed. Skin in general normal. No perspiration. Extremities, when not in a state of spasm, are entirely

relaxed, so that when raised from the bed they drop back as if paralyzed. Temperature below 100°. Pulse perfectly regular, full, and strong. Respiration not over 30. Duration of the stupor about four hours; is dazed on awakening and asks for water and food. After drinking several cups of milk sleeps the rest of the night. To-day he has considerable pain in the back of the head and feels more feeble than before. Appetite fairly good.

10th. No convulsion during the night, but unconsciousness and muscular twitchings same as before. Complains to-day of pain over middle of anterior surface of the left leg, which presents an irregularity about an inch and a half long, slightly inflamed and tender on pressure. Expectoration of bloody mucus has now entirely ceased. No abnormal physical signs in the lungs. No longer coughs. Bowels move regularly. No bladder-symptoms.

11th. Slight convulsion last night, in which the lower extremities did not seem to take part. After the convulsion he had several attacks of muscular twitchings during the stupor, which lasted about two hours. Then went to sleep until 4 A.M. Appetite fairly good. Headache continued during the day. Pupils equally contracted, and react but little to light.

12th. No convulsion. Some muscular twitchings, mostly of the upper extremities, during a stupor lasting several hours. Jaws were tightly closed for a considerable length of time. Awake during the rest of the night. Headache marked. Slept several hours during the day. Urine: no albumin and no sugar.

13th. No change in symptoms. Temperature 100° and below. Pulse good and strong. Respiration shallow during a paroxysm, becoming deeper and fuller now and then. Pain over the anterior border of the left tibia continues. Ordination: Inunctions ungt. hydrarg. 4.0 pro die.

14th. No change. Nor is there anything very marked up to January 26th.

Date.	Hour.	Pulse.	Temp.	Resp.	Remarks.
Jan. 26	8 A.M.	96	99°	...	Patient quiet from 6 A.M. to 12.45 P.M. Then short attack of spasmodic contractions, which were repeated at 1.45 P.M. Slept until 3.30 P.M.
	3.45 P.M.	...	...	...	Slight chill followed by spasmodic contractions and fainting-spell. Pulse regular. Respiration irregular. Trembling of upper and lower extremities toward end of attack.
	4	92	111	...	
	4.20	88	106.4	...	
	8	88	107.5	...	
	10	...	...	...
					Chill followed by spasmodic contractions and fainting-spell. Pulse regular. Respiration irregular.
	11.30	80	112.2	...	Similar attack.
	12 M.	84	104	...	
	27 2 A.M.	...	...	...	Similar attack.
	3	...	...	...	Similar attack.
	4	84	104.4	...	
	5.30	...	...	...	Similar attack. Expectorates blood.
	6	...	...	...	Similar attack. Expectorates blood.
	8	86	104.6	...	
	11	...	102.2	...	During forenoon several slight attacks of spasmodic contractions and fainting-spells.

Date.	Hour.	Pulse.	Temp.	Resp.	Remarks.
	3.30 P.M.	...	109.2°	...	Chill followed by perspiration.
	5	...	109.4	...	From 4.30 to 5.30 P.M. marked attacks of spasmodic contractions. From 6 to 7 P.M. patient is quiet and feels languid and weary.
	8	80	101	16	At 7.30, also 8 P.M., chill and spasmodic contractions. Respiration irregular. Trembling of upper and lower extremities. Could not speak one-half hour.
	9	...	...	...	Similar attack.
	10	92	100.6	16	
	10.30	...	...	...	Chill, and similar attack.
28	12 M.	88	103	20	
	2 A.M.	92	109	20	
	3	...	...	...	Chill, spasmodic contractions, perspiration.
	4	88	104	20	
	6	84	100.3	16	
	7.45	...	...	...	Fainting-spell, spasmodic contractions, and expectoration of blood, followed by a chill.
	8	86	112	...	
	8.05	...	108.4	...	
	10	...	102	...	Feels very well. Took nourishment and slept from 12 M. to 1.30 P.M.
	2 P.M.	86	104.2	12	
	4	...	104	...	From 3.30 to 3.35 P.M. slight spasmodic contractions and fainting-spell.
	8	80	107.6	16	
	10	92	110.5	12	
	10.30	...	...	...	Chill followed by spasmodic contractions and marked perspiration.
	11	92	106	...	
29	1.30 A.M.	...	...	...	Patient complains of pains in the back and buzzing in ears; has palpitation, is restless, and expresses fear.
	2	96	112	12	
	3.20	...	...	...	Marked spasmodic contractions and twitching of the extremities. Groaning Voice hoarse. Pulse weak and irregular. Cold perspiration.
	4	96	99.8	...	Spasmodic contractions, during which he loses control of tongue and lower jaw. Could not see for half an hour.
	6	92	112	9	
	8	82	107.2	...	Could not speak or swallow and was not able to move his tongue, which was very dry.
	11	86	104	...	
	1.10 P.M.	...	...	...	Begins to speak and swallow.
	2	...	102.4	...	
	4	84	106.8	...	From 4.30 to 5.30 P.M. slept.
	8	80	102.8	16	Slept until 8 P.M. Complains of pain in the back.
	11	72	99.5	12	
30	1 A.M.	...	...	...	Choking-spell; becomes cyanotic and expectorates blood.
	1.40	52	...	52	Right eye counts fingers at four inches; cannot see with left. Hears well with right ear, not at all with left. Tongue not movable and not sensitive to the needle. Lower jaw fixed. Has two attacks in which the diaphragm is fixed, no respiratory movements can be seen, and he becomes almost black. Then diaphragmatic respiration 52 to the minute. Pulse regular (52), small.

Date.	Hour.	Pulse.	Temp.	Resp.	Remarks.
	1.45	...	...	...	Diaphragm fixed again; uses accessory muscles of respiration, and requests that his arms be elevated, as he can breathe better then.
	2.15	...	...	...	Crying-spell.
	2.30	84	106.2°	28	
	4	80	106.6	16	
	6	84	112	12	
	6.15	...	...	...	Choking-spell. Loses voice and control of tongue and lower jaw.
	8	88	105.4	62	Similar attack; four minutes later extremely pale. Pulse weak. Respiration 8. Arms elevated. Unconscious eight minutes.
	11	80	104.4	20	
	12.35	...	...	...	Choking-spell. Momentary tonic spasm. Transient dyspnoea. Conjunctival reflex normal.
	2 P.M.	74	104.7	...	Patient quiet. Jaw rigid. Mouth half open; tongue not movable and not sensitive to touch. Same insensibility of the gums, uvula, and other soft parts of the mouth. Water poured into the mouth with the patient on his back does not cause attempts at swallowing, but occasions coughing and interferes with respiration. Complains that his eyes are very sensitive to the light. Bed is enclosed with dark screens, which relieves him. The noise of opening an adjacent window, the rustling of paper, footsteps, etc., agitate him very much.
	4.10	...	...	...	Attack of spasmodic contractions. No apparent breathing for four minutes. Marked cyanosis, struggles for air; difficult to keep him in bed. Pulse is strong and regular. Marked perspiration. Same bulbar symptoms as before. Mouth open, lower jaw rigid.
	4.25	...	...	...	On inhaling a few drops of chloroform diaphragmatic breathing re-established, cyanosis relieved, and speech returns. Noises in the street, such as passing vehicles, or whispering near the bed, cause the patient to start suddenly; cries, screams, and puts his hands to his ears, and requests that they be plugged with cotton. Chloroform is given until relaxation is complete. The patient sleeps. Respiration regular.
	8	80	99.2	16	Pupils are smaller.
	10	84	...	20	Sleeps until 2.15 A.M.
31	2.15 A.M.	96	106.9	20	On awakening, hungry and thirsty; drinks contents of three siphons in two hours.
	5.30	...	...	...	Complains of pain in the side; has difficulty in breathing; an attack of spasmodic contractions; cyanotic and very restless.
	6	96	108	16	
	7	...	...	...	Patient feels very well; laughs and talks constantly.
	8	82	104.5	18	Indulging in poetry about his wife.
	9	82	106.3	18	
	11	82	99.4	16	Sleeps from 9.30 A.M. until awakened by noise at 12.15 P.M. Then has a choking-spell; diaphragm fixed, arms elevated.
	2 P.M.	80	103.1	21	

Date.	Hour.	Pulse.	Temp.	Resp.	Remarks.
	2.15	80	105.4°	20	Chill followed by spasmodic contractions; tongue and jaw fixed, eyes elevated and fixed. Apathetic. Twitching in the left cheek. Lower lip drawn to the left for a few minutes. Slight clonic contractions over the whole body, followed by a tonic contraction. Slight trembling of the right hand.
	2.50	...	...	...	Whole body is rigid; respiration interrupted. Patient grinds his teeth.
	3	...	...	...	Spasmodic contractions; cyanosis; dyspnœa; difficult to keep him in bed.
	3.15	80	106	20	
	3.25	...	...	...	Begins to talk.
	7.30	...	...	...	Having been asleep, awakens with a start and points to the ceiling, but nothing can be seen there.
	11.30	...	...	...	During sleep marked perspiration.
Feb. 1	12.15 A.M.	72	108	16	Complains of pain in the back and back of head.
	1	...	...	...	Spasmodic contractions for five minutes.
	1.30	...	...	...	Cyanosis; dyspnœa; difficult to keep him in bed. Mouth and eyes closed. Tongue and lower jaw not movable.
	4	72	112	16	
	4.40	...	...	...	Dyspnœa, pain in back. Delirium.
	5	72	...	60	Spasmodic contractions for ten minutes. Pale. Eyes open and rolling slightly. Pulse (72) regular. Respiration 60. Diaphragm fixed. Requests arms elevated to facilitate breathing.
	8	70	107.4	22	
	8.45	...	...	...	Spasmodic contractions ten minutes.
	9.15	...	99.2	...	
	10.40	68	...	48	Spasmodic contractions. Utters inarticulate sounds. Eyes turned. Twitching of hands and feet, lower jaw, and muscles of the neck.
	11	68	105.4	20	Rises, but falls down exhausted. Complains of pain in the middle of abdomen.
	11.20	...	...	...	Spasmodic contractions. Cyanosis. Sits up and throws his arms about him. Is conscious and hungry. Choking-spell.
	11.50	...	...	...	Can speak again.
	2 P.M.	68	104.3	12	
	3.10	68	107.5	20	Chill and fainting-spell.
	5	70	107.1	12	
	6.30	...	...	...	Spasmodic contractions. Diaphragm fixed.
	7.45	...	...	...	Spasmodic contractions. Twitching of the upper extremities. Pupils small. Pulse regular.
	10	...	...	...	Similar attack.
	10.30	...	...	...	Spasmodic contractions twenty minutes. Twitching of extremities. Eyes turned. Speech lost.
2	12 M.	72	112	20	
	1.50 A.M.	...	...	...	Choking-spell. Cyanosis. Trembling of extremities. Respiration irregular. Pulse regular.
	2	96	110	20	
	2.30	...	...	...	Spasmodic contractions. Expresses fear. No apparent respiration. Diaphragm fixed. Active delirium; wishes to get out of bed.

Date.	Hour.	Pulse.	Temp.	Resp.	Remarks.
	3	80	112°	16	
	4.30	72	112	10	
	4.45	...	...	...	Spasmodic contractions.
	8	70	99	21	Feels weak and complains of pain.
	11	72	108.1	22	Slept all day.
	8 P.M.	64	112	20	Spasmodic contractions. Mouth and eyes closed. Trembling of the whole body.
	10	64	111.4	20	
	12 M.	72	105.3	16	
3	1 A.M.	...	...	...	Slept from 8.15 P.M. until 1 A.M. Fainting-spell for five minutes; lost speech.
	3.30	...	...	...	Same attack. Delirium.
	6	80	103.6	16	Pulse regular. Marked perspiration. Asleep.
	8	70	102.8	20	
	12 M.	64	103.6	21	An attack. Otherwise quiet all day.
	4 P.M.	68	103.4	20	
	10.15	...	...	...	Spasmodic contractions. Respiration irregular. Pulse regular. Dyspnœa. Bled from mouth. Twenty minutes later could talk.
4	...	...	...	...	Slept until 4.30 A.M.
	4.54 A.M.	...	...	...	Spasmodic contractions. Eyes turned. Twitchings of the extremities. Pulse regular. Pain in back and back of the head. Tongue swollen.
	6.30	...	...	...	Fainting-spell.
	10	...	...	...	Transferred to isolated ward.
	10.15	...	...	...	Attack. Cyanosis. Trismus. Throwing hands and feet. Duration fifteen minutes, then conscious. Loss of voice twenty minutes.
	12 M.	...	103.8	...	
	3 P.M.	76	99.8	16	Sleeping well.
	7	76	102.8	16	Sleeping well.
5	2 A.M.	69	102.8	16	Pulse irregular. Sleeping well.
	8	82	99.5	14	
	10	70	99.6	17	Pulse strong, but irregular.
	12 M.	82	99.6	16	Pulse regular.
	2 P.M.	75	99.8	15	Pulse good.
	4	76	100	17	Pulse good.
	6	78	99.8	17	Pulse good.
	8	74	99.6	14	Pulse good.
	12 P.M.	60	99	16	Pulse irregular. Marked perspiration of head and lower extremities; body is dry.
6	5 A.M.	70	100	16	Patient feels languid.
	8	82	104.2	14	Pulse irregular.
	10	76	104.2	18	Pulse more regular.
	12 M.	76	108.2	18	Pulse more regular. Perspiration lower part of body.
	2 P.M.	80	100.5	16	Pulse more regular.
	4	75-80	108.2	12-18	Attack. Forehead, chest, and lower extremities cold; arms perspiring. Apparent loss of speech. Convergent strabismus. Complaints of pain in spine, neck, temples, and jaw.
	6	72	103.2	14	
	8	75	102.8	16	Sleeps well.
	1 A.M.	67	106	14	Pulse regular. Sleep restless.
7	4	78	107.8	17	Marked perspiration all night. Pulse regular.
	6	76	104.8	18	
	8	76	103.8	20	Marked perspiration. Lower extremities cold.
	10	75	99.7	18	

Date.	Hour.	Pulse.	Temp.	Resp.	Remarks.
	12 M.	74	99.6°	20	
	2 P.M.	80	100.6	19	
	4	80	104.6	15	
	6	76	104	18	
	8	76	109	17	Attack two to three minutes. Feels badly; tongue and lips dry. Clonic spasms of the muscles of the jaw. During attack pulse and respiration regular.
8	2 A.M.	72	100.6	17	Sleeps well.
	7	80	106.8	15	
	9	81	107.2	15	Pulse irregular.
	11	78	101	20	Pulse irregular.
	1 P.M.	75-94	110	14-48	Attack.
	3	75	113	20-60	Attack.
	3.30	76	...	70-14	Attack.
	4	...	...	...	Half-hour sleep.
	5	75	107.2	30	
	7.30	80-74	113.4	66-44	Attack. Complains of pain in the back of the neck. Suddenly unconscious. Groaning. Respiration short. After attack so confused that he imagines it is noon. Asks for morphine so as to be able to sleep.
	8.30	...	...	...	Is asleep without it.
9	1 A.M.	72	108.2	18	Is asleep.
	4	78	106.2	21	Is asleep.
	8	84	103.8	21	Pulse full, strong, regular.
	10	78	99.4	19	Feels very well.
	2 P.M.	84	106.4	22	Marked palpitation of the heart.
	2.30	75-80	113-98	16-54	Movements of deglutition with lower jaw.
	3	...	...	18-22	Attack.
	5	75	104.6	20	
	7	80	101.2	23	Pulse alternately slow and rapid.
	11	74	104	16	Sleeps quietly.
10	4 A.M.	72	103.6	22	Sleeps quietly.
	7	82	{ 104.8 105.6 K.	24	Marked perspiration lower part of body.
	10	82	{ 104.8 105.4 Ax.	28	
	12 M.	87	105	30	Attack.
	2 P.M.	98	{ 100.8 105.2 K.	24	
	4	81	{ 103 103 T.	22	
	6	75	102.6	22	
	8	82	102.6	21	Attack. Eyes converge. Whole body in tonic spasm. Marked extension of the extremities. Fingers flexed, later extended. Abdominal wall tense. Duration fifteen minutes.
11	1 A.M.	64	102.8	20	Sleeps quietly. From now on head-nurse, Mr. Reyher, takes a skeptical view of the attacks, which he allows the patient to notice; and in his presence makes but trivial and inaccurate notes of the different spasmodic attacks and fainting-spells. On the other hand, nurse, Mr. Mielsch, acts very much worried about the condition of the patient, takes most elaborate notes of the details of the different attacks, which the patient is allowed to read. As the

Date.	Hour.	Pulse.	Temp.	Resp.	Remarks.
					result of the above, during the day service of nurse Reyner the patient has no attacks (for six days); dislikes the nurse very much, complains about the same to Dr. Bullinger, and expresses his preference for his night nurse, Mielsch. As soon as the service of the night nurse begins, the patient has attacks at intervals; the other nurse is usually called, and is then present. After the attack the patient carefully looks over the notes made at the time
	8.30 P.M.	...	...	...	Patient complains of sudden, marked, stabbing-pains in the lower part of the spine, radiating toward the abdomen, and upward to the back of the neck, temples, and lower jaw. Trismus results.
	9.30	92-85	117.0°	60	Attack thirty to thirty-five minutes. Patient feeling languid from preceding attacks, requests that the temperature be taken before sleep. While the thermometer is in the rectum sudden unconsciousness; eyes open and turned upward, Duration two to three minutes. Then the whole body is extended, the eyes, now converging, are now closed; grasps the back of the neck with the left hand; groans, turns to the right side; puts his hand to his forehead, and apparently awakes. After a few minutes the eyes again become fixed and converge; he paws the air with his hands; the chest is pushed forward and the head backward. Face and upper part of chest slightly red. Patient gradually awakes, is apathetic and talks incoherently. During the attack the heart's action is usually irritable. The character of the respiration varies; long, deep inspirations suddenly become short and jerky. Breathes through nose only; expiration shorter than inspiration. A quick, short breath precedes the return to normal breathing.
	11 P.M.	94	117.0	20	Perfectly conscious in spite of the high temperature, but feels languid.
12	2 A.M.	78	108.6	26	
	6	76	103.4	24	Pulse regular.
	8	87	102.4	20	Pulse very irregular.
	12 M.	75	105.0	25	Pulse very irregular.
	2 P.M.	96	{ 109.0 R. 108.6 K.	21	
	4	81-94	115.0 Ax.	24-60	Thermometer burst.
	4.15	...	...	...	Attack. Palpitation; trismus; convergent strabismus. Spasmodic contractions of body twice. Seems to be unconscious for four minutes. Indicates that he has pain in the back of the neck. On recovering his voice he asks for a drink, and gets out of bed to pass urine. Claims that he has difficulty in passing urine after an attack. Duration twelve minutes.
	6	82	117.0	20	
	9	70	107.0	23	Pulse regular.
	12	64	108.0	32	Pulse regular. Complains of sudden loss of memory. At the time of an attack, patient no

Date.	Hour.	Pulse.	Temp.	Resp.	Remarks.
					longer froths at the mouth, which was formerly tinged with blood, since nurse Reyher told nurse Mielsch, in the presence of the patient, that anybody could do that by simply biting the lip, or injuring the gum with the finger-nail, etc.
13	6 A.M.	66	104.2°	18	Pulse regular.
	8	78	106.6	26	
	10	78	107.2	22	
	10.30	...	105.4 Ax.	...	
	1 P.M.	72-92	{ 117.0 117.0 Ax.	38	Light attack, as described.
	1.20	74	{ 114 113 K.	24	Lower extremities feel warm, but patient asks for hot-water bags.
	3	81	{ 103.8 103.2 Ax.	30	
	5	75	{ 106.8 104.8 Ax.	27	
	7	72	{ 110.6 109.4 K.	27	
	9	75	117	14	
14	1 A.M.	66	106.6	22	
	6	70	{ 106.6 104.6 K.	16	
	7	...	110.2	...	Marked perspiration.
	8	82	{ 103 102.6 Ax.	22	
	10	72	{ 102.8 101.5 Ax.	24	Patient reads the paper, is in a good humor, and feels well.
	1 P.M.	75	{ 101.6 101 Ax.	21	Is in the open air for one hour on the stretcher.
	3	81	{ 105.2 104 Ax.	21	
	5	66	{ 109.4 108.2 Ax.	22	
	7	76-80	{ 117 115 Ax.	18-60	Attack. Duration twenty minutes.
	10	76	110.2	21	
15	7 A.M.	90	{ 104.2 102.6 K.	20	
	9	84	{ 106.6 105.2 Ax.	21	
	11	66	{ 103.8 102 Ax.	32	
	1 P.M.	81	{ 106.4 104.6 K.	30	
	3	72	{ 106.6 105.8 K.	34	
	5	66	{ 99 98 Ax.	24	Patient gets up. Temperature taken ten minutes later.
	7	72	{ 103.2 102 Ax.	24	
	11	70	117	26	Slept from 8 until 11 P.M. Thermometer shows this temperature in two minutes. Takes a drink and goes to sleep again. On awakening stretches himself, and claims to have a sudden sharp pain in the lower left side. Has no attack.
16	1 A.M.	68	108.2	26	
	4	72	108.6	26	

Date.	Hour.	Pulse.	Temp.	Resp.	Remarks.
16	6 A.M.	66	104.2°	25	Slept well all night.
	8	72	{ 102.8 101.6 A.x.	28	Gets up and feels well.
	10	68	{ 108.4 107.6 A.x.	32	
	10.15	...	...	...	Goes to bed and sleeps an hour.
	12 M.	75	{ 105.8 104.6 A.x.	31	
	2 P.M.	78	{ 107.5 106 A.x.	28	Patient rises and remains out of bed until four o'clock.
	4	81	117	32	Attack. Only moderate development of the former symptoms. Duration twelve minutes. Hears and understands everything; wishes to indicate by signs that he has lost his voice. In ten minutes can speak again and is fully conscious.
	4.45	...	...	...	Jumps out of bed; wishes to be discharged at once, and behaves in an unruly manner.
	5.30	...	...	...	At first does not wish his supper, but later on he decides to take it.
	6	...	...	...	Wishes to be discharged, and will not permit his temperature to be taken.
17	6 A.M.	...	...	...	Will not permit his temperature to be taken. Slept well all night.
	7	84	105	25	
	8	...	...	...	Gets up and feels well.
	9	78	103.4	...	
	11	72	{ 108.2 107 A.x. 107 K.	31	
	1 P.M.	72	103	28	
	3	78	...	21	
	4	69	101	27	Returns to bed. Has been up since 8 A.M., and feels well.
	8	78	110.2	21	Slight attack. Eyes open. Toes and lower extremities strongly extended. Lower part of the body feels warmer than the upper. Holds the back of his neck with his left hand. ¹
18	3.45 A.M.	64	117	28	Attack. Patient sleeps restlessly, occasionally complains of pain in the back of the neck. Suddenly unconscious, eyes open, not converging. Mouth open. Fingers extended, but not separated much. Legs stiff, toes extended. Left arm remains for some time in the position given it. Shortly before he regains consciousness the eyes are closed. Duration ten minutes.
	4	72	105.6	28	
	6	76	{ 107 106.8 A.x. 106 K.	22	

¹ After the visit of Dr. Jacobi, the head-nurse takes the following notes on a sheet of paper: "During a spasmodic attack the eyes and mouth must be open, the tongue protruding. The extensors of the foot contracted; the toes extended. The arms should be elevated, and should temporarily remain in any position they are put in. During a fainting-spell there must be some convergent strabismus." Patient reads the notes and immediately wishes them explained to him. He is also informed that Dr. Jacobi is dissatisfied with the record kept to date, and desires the closest observations made of the different attacks, notes on which are to be taken at once. After this the attacks which occurred corresponded exactly with the notes above mentioned.

Date.	Hour.	Pulse.	Temp.	Resp.	Remarks
18	8 A.M.	72	108°	22	
	10	78	{ 105.4 104.2 Ax.	26	
	12 M.	72	{ 103.8 102.6 Ax.	24	
...	
	2 P.M.	72	{ 105.2 104.2 Ax. 104 K.	27	In the presence of the patient, Dr. Bullinger reproaches the head-nurse for having made but poor observations of the attacks. Dr. Jacobi is said to have complained and threatened to have the nurse discharged. Immediately after this the patient has three attacks, and after each one nimbly jumps out of bed to read the notes made by the nurse.
	2.30	80	...	40	Slight attack of spasmodic contractions. Eyes and mouth somewhat open. Ankle-joint and toes extended. Head cool; chest warm. Duration three minutes. After attack said that his tongue felt heavy. Did not know that he had had one. After that felt cheerful. Suddenly notices that he cannot see with his left eye; at a distance of one foot counts two fingers instead of five. After twenty minutes he can read the paper.
	3	80	{ 117(?) 117(?) Ax.	36	Spasmodic attack, more marked than former ones. Pain in the back of the neck. Extension of the whole body. Rigidity. Toes extended. Any difference in surface-temperature cannot be felt. Refused to have temperature taken the second time. Duration two minutes.
	4	75	...	36	Complains of pain in the back of the neck.
	4.30	80	117.0	30	Spasmodic attack. Eyes converged. Eyes and mouth open. Whole body extended. Tonic spasm. Toes extended. Left arm remains a few seconds in the position given it. Right arm the same. Duration ten minutes. Refused to have temperature taken again.
	5.45	75	107.2	28	Complains of pain in the spine and the back of the neck. Head-nurse Reyher takes a skeptical view of the attacks. Patient sleeps from 6 to 7 P.M. Perspiration on forehead, in axilla, and flexor side of knee. Has an immense appetite. Tells nurse Mielsch of his hatred toward the head-nurse, and says he will do all he can to get the latter out of the service.
	8	80	117	4-44	Immediately after his meal has severe pain in the back of the neck. Becomes unconscious on introduction of the thermometer.
18	...	...	...	...	Attack. Eyes open, convergent, and elevated. Mouth open. Right arm placed with shoulder extended, does not remain so; remains a few moments when placed with elbow flexed. Shoulder and elbow of left arm remain in any position in which they are placed. Fingers of left hand slightly flexed, index-finger more so. Thumb extended and abducted. Legs rigid and cannot be bent at the knee. Foot and toes extended. Any difference in the surface-tempera-

Date.	Hour.	Pulse.	Temp.	Resp.	Remarks.
					ture cannot be appreciated. Breathing; at first patient takes a deep inspiration every fifteen seconds, followed by a short, quick expiration. At the middle of the attack the respiration becomes more rapid (44) and snoring in character. The eyes are then closed. A short time after the patient becomes conscious and utters a sharp cry of pain. After the attack he will not allow his temperature to be taken.
18	8.45 P.M.	...	...	...	Complains up to the present time of a pain in the back of his neck. Asks that a narcotic be given him. Claims also to have a darting pain in the region of the heart, which radiates toward the axilla. Restless sleep from 9 to 11.30 P.M.
	11.30 P.M.	69	106.2°	18	
19	3.30 A.M.	64	105.2	25	Sleeps quietly.
	6	73	109 R.	19	
	6.30	...	{ 108.2 Ax. 107 K.	...	
	8	100	{ 104.4 103 Ax.	28	The temperature is taken with the patient standing up.
	10	66	{ 106.2 R. 105.2 Ax.	23	
	12 M.	61	{ 103.4 R. 102.4 Ax.	...	
	2 P.M.	68	{ 103.2 R. 102.2 K.	22	From 2.30 to 3 P.M. patient visits a friend in a neighboring ward.
	4	72	{ 106.8 R. 106.6 Ax.	30	Has had no attacks during the service of the head-nurse.
	6	69	103	27	Has the sensation as if he had received several injections of morphine, which he attributes to the new medicine. Complains of pain in the eyes and head. Sleeps from 6.30 to 9.30.
	10	66	108.4	29	Sleeps from 10 P.M. to 1.30 A.M.
20	1.30 A.M.	62	113	32	Slept quietly during the night.
	4	63	106.6	32	
	6	104	108.6	38	
	7	...	...	...	Patient gets up.
	8	72	117	28	Attack. Eyes and mouth open. Unconscious. Differences in surface-temperature not noticeable. Duration two minutes.
	12 M.	...	...	...	In bed from 8 to 12 o'clock.
	7 P.M.	80	117	34	Does not wish his temperature taken.
	7.15	...	118	...	Attack. Unconscious. Eyes and mouth open. Froths at the mouth. Extremities extended and rigid. Toes extended. Fingers spread apart. Index-finger flexed. Loses voice. Duration ten minutes.
	7.40	...	...	...	Attack. Unconscious. Eyes open and looking straight ahead; later converge; then closed. All the extremities except the right arm rigid. Hands spasmodically contracted. Toes extended. Froths at the mouth. Suddenly he becomes violent, kicks with his legs, throws his arms about, elevates the upper part of the body. Becomes more quiet, and awakes. No differences in surface-temperatures perceptible. Duration ten minutes.

Date.	Hour.	Pulse.	Temp.	Resp.	Remarks.
19	7.50 P.M.	...	98.4°	...	Temperature taken by Dr. Bullinger immediately after the attack.
	8	...	...	...	Fainting-spell. Unconscious. During the attempt to change the position of the bed the patient awakes, is furious, and threatens to do the head-nurse bodily injury with a chair. Patient complains to Dr. Bullinger about head-nurse Reyher and would rather leave the hospital than be attended by him. Head-nurse is transferred to other duty.
	10.30	93	102.8	34	Goes to sleep after the bed has been put back into its former position.
21	2 A.M.	64	106	32	Temperature taken with patient standing.
	4	70	111.8	34	Gets up. All temperatures taken from 6 A.M. to 2 P.M. with patient standing up out of bed.
	6	77	105.8	34	
	8	102	{ 103.4 101.2 Ax.	30	Pulse full and strong.
	10	97	{ 105.4 104.8 Ax.	36	Pulse irregular.
	12 M.	90	{ 103.6 102.4 Ax.	32	Takes a walk in the yard from 12.30 to 2 P.M.
	2 P.M.	86	104.2	34	Goes to bed. The house physician re-establishes friendly relations between the patient and the head-nurse, and the latter resumes duty.
	3	90	106.8	32	
		84	111.2	48	Patient feels badly; has pain in the region of the heart.
	4.30	75	107.4	32	
	5.15	...	{ 111 R. 109 Penis.	...	Temperature taken with patient out of bed and standing up. Head-nurse allows patient to observe that he <i>does</i> believe in the attacks, and tries in other ways to get on good terms with him.
	6	105	123	...	Attack. Complains of palpitation of the heart and marked thirst. Unconscious. Mouth and eyes open, the latter turned upward and not converging. Lower extremities fully extended, some twitching of muscles of the thigh. Big toe fully extended. Both upper extremities remain in any position into which they are placed. Right hand is perfectly relaxed. Palpitation gradually subsides. Suddenly tonic and clonic spasms of the whole body. After lying quietly, wildly throws himself about. The knees are drawn to the abdomen for a short time. Fingers of the left hand spread and slightly flexed. Pulse 81. Respiration 42. The head is suddenly and spasmodically fully extended; the face becomes very red; breathes quickly and noisily. Eyes are now tightly closed. When the body is held forward the tongue protrudes to the outer margin of the lips, and feels perfectly relaxed. Some trembling of the lower jaw. Differences in surface-temperatures not perceptible. Consciousness returns in twelve minutes. Is now very thirsty and drinks the contents of two siphons in forty-five minutes.

HYPERTHERMY.

21

Date.	Hour.	Pulse.	Temp.	Resp.	Remarks.
19	7 P.M.	100	117.0°	44	Attack. Like the former, but less marked. Duration five minutes.
	7.10	...	113 Ax.	...	Temperature in the axilla with patient out of bed. Mercury reaches the limit of the thermometer in a few seconds.
	7.30	...	110 Penis.	...	
	9	97	{ 112.8 Rect. 110 Penis.	44	Goes to sleep.
22	2 A.M.	74	110.6	34	
	6	82	{ 111.0 R. 109 P.	42	
	7	92	{ 113.0 Ax. 111.0 Penis.	46	Temperature taken with patient out of bed.
	8	75	{ 106.0 R. 104.6 P.	39	Temperature taken with patient out of bed.
	9.30	82	{ 109.8 R. 108.4 P.	42	
	10.30	72	{ 106.1 105.2 M'th.	41	Temperature taken with patient out of bed.
	12 M.	90	110.6	36	The upper part of the body feels warmer than the lower.
	2 P.M.	82	{ 106.2 104.2 P.	34	
	4	76	{ 104.8 103.2 M.	24	
	7	...	...	...	Moderate attack during sleep. Violent efforts at swallowing. Gurgling sounds. Eyes open and fixed. Toes flexed. Patient awakes, talks irrationally, sees visions of people on the ceiling, who wish to put him out. Complaints of a burning sensation inside of his body and drinks the contents of a siphon in a few minutes.
	7.20	86	123.0	58	Perfectly conscious. Thermometer introduced by the nurse; temperature reached in three minutes.
	7.35	...	117.0	...	Patient has a marked sensation of fear; becomes unconscious. Eyes converge and move from one side to the other. Mouth open and the tongue protruding. Extremities rigid. Duration five minutes. Conscious; much thirst; talks irrationally.
	8	...	...	...	No appetite. Attack. Duration five minutes. In addition to usual symptoms there is a general convulsive trembling over the whole body.
	...	...	123.0	...	Temperature taken by Dr. Bullinger.
	8.30	75	123(?)	37	Attack. Duration five minutes. Thermometer introduced into the rectum, was found broken when withdrawn, temperature questionable, no other reason known to nurse if not broken by heat. Dr. Bullinger was present. During this attack, patient suddenly developed an intense redness over the face, upper part of the body, and arms only, lasting but a short time. Intense thirst; drank contents of one siphon.
	9.30	...	117	...	Attack. Marked fainting-spell. Duration fifteen minutes. Mouth and eyes closed tightly. Surface of the abdomen and thighs very warm; chest, head, and legs cool. Tickling in nose and ears causes no reaction.

Date.	Hour.	Pulse.	Temp.	Resp.	Remarks.
22	10 P.M.	...	...	...	Talks and is irrational.
	10.30	...	...	...	Goes to sleep.
23	2 A.M.	64	108.4°	36	Sleeping quietly.
	5	72	117	32	
	5.05	...	101.2	...	With the same thermometer taken five minutes later.
	6	...	111.8 Penis.	...	Thermometer reaches this temperature quickly.
	7	...	...	...	Patient gets up.
	8	74	103.8	34	
	9.30	...	...	...	Patient goes to bed.
	10	78	103.6	30	
	12 M.	78	105.2	38	Patient gets up.
	2 P.M.	75	106.5	36	Patient goes to bed.
	4	45	107	30	
	6	60	107.8	24	
24	9.30	64	109.8	30	Patient is asleep.
	2 A.M.	72	109.5	37	Patient has pain in the back of the neck.
	5	70	107.2	42	
	7	97	{ 112 111.2 Penis.	44	Upper part of the body hot, lower portion cool ; the whole covered with perspiration. Head is very hot. With this he is out of bed. Complains of headache and backache. Believing he will have an attack, takes the thermometer and introduces it himself.
	7.30	108	{ 128.5 117 Ax.	...	Attack. Duration five minutes. Eyes closed, then open and converging. Fingers flexed. Convulsive twitchings over the whole body. Flexion and extension of legs, which are moist and cool.
	7.45	...	115	54	Temperature taken in the presence of both nurses.
	8	...	113 Penis.	...	
	8.15	...	107.4	...	
	9	74	105.4	27	
	9.45	105	135.0	45	Attack. Duration eight minutes. Eyes and mouth open, etc. Spasmodic contraction of the muscles of the abdomen. Toward end of attack convulsive twitchings over the whole body ; also of the jaw. Eyes converge. Differences in surface-temperature not noticeable. Intense redness of the head and upper part of the body. Thermometer was introduced into the rectum with the right hand of the nurse ; held there four minutes and withdrawn, patient having been uncovered. During the time, with the left hand, the nurse held the left hand of the patient, feeling the pulse ; at the same time the head-nurse held up the right arm of the patient. Then suddenly releasing it, it remained in the same elevated position for several minutes. Right hand perfectly relaxed.
	10	95	107.4	49	
	12 M.	95	99.8	40	
	2 P.M.	108	{ 118.4 117 Ax.	45	Patient is much excited and has palpitation.
	2.30	...	...	...	Palpitation. Feet cold and moist. Legs covered with perspiration. Upper portion of body warm. Forehead hot and perspiring.

Date.	Hour.	Pulse.	Temp.	Resp.	Remarks.
24	4.15 P.M.	106	{ 135.0° (117 Ax.?)	45	Patient much excited. Suddenly unconscious. Attack. Duration five minutes. Usual symptoms. Also sudden intense redness of the head and upper portions of the body. After the attack he trembles violently and becomes unconscious. Eyes open and the pupils react to light. Conscious in two minutes and goes to sleep soon after. Thermometer continually held by the nurse while the temperature is being taken.
	6	75	114.6	36	No appetite for the last two days.
	7.30	80	113.4	43	
	10.30	...	...	...	Attack during sleep. Duration four minutes. Usual symptoms to a slighter degree. Talks much during his sleep.
25	5 A.M.	66	107.8	36	
	6	102	111.8	38	
	6.30	...	...	...	Gets up.
	8	92	108	38	Temperature taken with patient out of bed.
	10	72	106.8	36	
	12 M.	88	114.2	37	Temperature taken with patient out of bed.
	2 P.M.	92	116.4	38	Temperature taken with patient out of bed.
	4	75	117	38	In bed from 2 to 4 P.M.
	4.25	106	111.2	44	
	4.30	92	44 Cels.	42	
	4.40	81	41 Cels.	36	Last two temperatures taken in the axilla with patient standing up out of bed. Feels ill and goes to bed. Palpitation not irregular. Feet cool, legs warmer, thighs and body warm, head hot. Perspiring on the flexor side of knee, axilla, and on the forehead. Has no appetite.
	7.50	97	{ 131.6 (131 Ax.)	36	Taken by Dr. Bullinger.
	9	96	127.2	108	Attack. Observation by Dr. Fischlowitz. "Left hand became claw-shaped and the fingers could not be extended. The right remained normal. Arms when elevated remained so. Toes were extended in a tonic spasm and both feet became involved. The chest and neck were red and a scar on the left side became very visible. Convulsive opisthotonos followed by clonic spasm. After the attack very thirsty and craved water."
	10	105	136.0	45	Attack. Observations by Dr. Fischlowitz. "Similar to the one at 9 P.M. I tried suggestion on the patient, but it had no effect. Immediately after the attack he sleeps for a few minutes, then awakes and talks very slowly and in a moderate tone of voice."
26	11	82	117	38	
	6 A.M.	66	115	38	Patient gets up. Temperature taken out of bed.
	8	78	113.6	44	Has no appetite. Returns to bed.
	10	76	108.2	38	Patient gets up. Temperature taken out of bed.
	12 M.	84	106.4	36	
	4 P.M.	86	109.8	38	Patient goes to bed. Temperature taken out of bed.
	6	116	{ 133 (131.2 Ax.)	45	Attack. Same symptoms. Drs. Schottky and Fischlowitz.
	6.30	94	122.6	46	Attack. Same symptoms. Drs. Schottky and Fischlowitz.

Date.	Hour.	Pulse.	Temp.	Resp.	Remarks.
26	6.50 P.M.	88	111°	47	
	10	68	116.5	40	Marked perspiration on chest, arms, and hands, flexor side of knee, and in the axilla; not elsewhere.
	11	78	{ 125 123 Ax.	48	Attack. Feels badly, becomes unconscious, and has the usual symptoms. Also intense redness over upper portion of body, neck, and head. The bloodvessels of the neck are very much distended. Duration five minutes.
	11.10	74	119	54	Fainting-spell. Unconscious. No spasmodic contractions. Lies perfectly quiet. Awakes in three minutes with a start, and looks about in alarm. Has a spasm in the back of the neck, and claims that he cannot turn his head.
	11.35	76	105.6	36	
	11.45	...	104.2	...	When not having an attack appears cheerful, but his limbs feel tired.
	27 6 A.M.	98	107.4	38	
	8	76	101.4	32	
	10	72	104.4	36	Is out of bed. Complains of cold and returns. Has extra covering and hot-water bags.
	12 M.	78	105.8	36	Temperature taken with patient out of bed.
27	2 P.M.	72	109.4	38	Transferred to Male Ward No. 1.
	4	96	114.2	48	Temperature taken by the patient. Hands over the covers.
	4 50	110	{ 124 118 Ax.	50	Both temperatures taken by nurse with patient standing. Sudden short attack like the preceding ones.

The following days are without any records of temperatures, the man being moody and at times violent, and unwilling to submit to the use of the thermometer:

Date.	Hour.	Pulse.	Temp.	Resp.	Remarks.
March 5	2 A.M.	68	148.0°	72	Thermometer introduced by patient and removed by the nurse.
	2.30	70	118.0	36	Attack. Duration three minutes.
	6	68	{ 115.0 113.2 Ax.	36	Much thirst.
	8	84	112.6	40	Temperature twice. Was in a bad humor all day. Would not permit the taking of temperature. Spent most of the time sitting on a chair and looking straight ahead.
	6.30 P.M.	96	119.2	44	
	9	80	120.6	60	Thermometer introduced by the patient. Attack. Palpitation. Face flushed, skin otherwise pale. Perspiration on the legs and feet. Respiration superficial. Pulse regular. Upper extremities rigid, later relaxed. Duration seven minutes.
	10	80	136.0	60	Feels cold. Spasm in the back of the neck. Pain in the left side.
	10.15	68	137.0	64	
	10.30	...	121.8 K.	...	Thermometer introduced and removed by the nurse. Complains of palpitation. Spasmodic attack. Twitchings all over the body. Difficulty in breathing. Face hot and flushed; surface of the body cool; feet damp.

HYPERTHERMY.

Date.	Hour.	Pulse.	Temp.	Resp.	Remarks.
6	10 A.M.	66	119.0° Ax.	40	Temperature taken with patient out of bed, in the presence of Dr. Bullinger. Skin is pale and the arms are relaxed. Ten minutes later patient seems languid and weak.
	2.15 P.M.	90	124	48	
	10.30	72	133.4	64	
	12 M.	72	148	60	
					Thermometer introduced by the patient, and removed by the nurse during unconsciousness of the former.
7	12.18 A.M.	...	127	...	Feels very weak, and sleeps soundly until 4 P.M.
	4	72	116.0 Ax.	40	Temperature taken with patient out of bed.
	6	80	117.0	40	During the day the patient was very unruly, and would not permit his temperature to be taken. Had taken offence at the remark of the nurse, when the latter asked him if he were going to have a temperature of 150° again.
	10.30 P.M.	80	135.0	40	Thermometer introduced by the patient and removed by the nurse. Attack. Duration five minutes. Eyes and mouth closed. Head flushed. Fingers flexed. Toes extended. Unconscious.
	11.15	84	132.0	50	Patient is on better terms with the night-nurse, and allows the latter to quiet him. Has not eaten anything all day, but now takes food with relish.
	12 M.	72	116.0	40	
8	12.15 A.M.	...	135.0	...	Temperature taken with patient sitting in a chair.
	1	68	142.0	48	Attack. Spasmodic contractions. Unconsciousness.
	3	...	127.0	...	
	4	72	148.0	68	Attack. Pain in the back of the neck and on the left side. Unconscious. Face flushed. Mouth half open, tongue protruding. Extremities tremble. Conscious and very thirsty.
	6	80	114.4	36	Thermometer introduced and held by the nurse.
	1 P.M.	90	116.0	40	
	3	90	112.8	42	
	5	84	111.8	40	Patient was quite sensible all day. Out of bed most of the day.
9	8 A.M.	96	115.8	36	
	10	90	113.0	40	
	12 M.	100	109.8	44	
	2.45 P.M.	96	143.8	43	Palpitation. Slight spasmodic contractions. Unconscious four minutes. Could not speak for fifteen minutes.
	4.50	100	142.0	56	
	5	84	125.0	48	
	6.15	...	132.0	...	Very thirsty. Drinks very much.

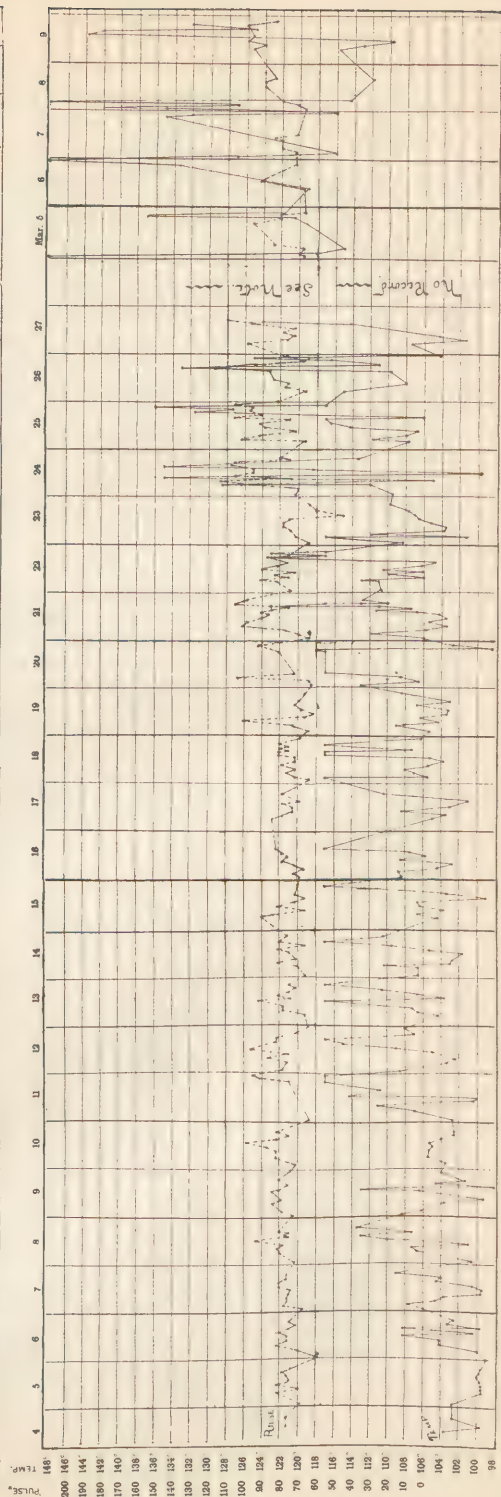
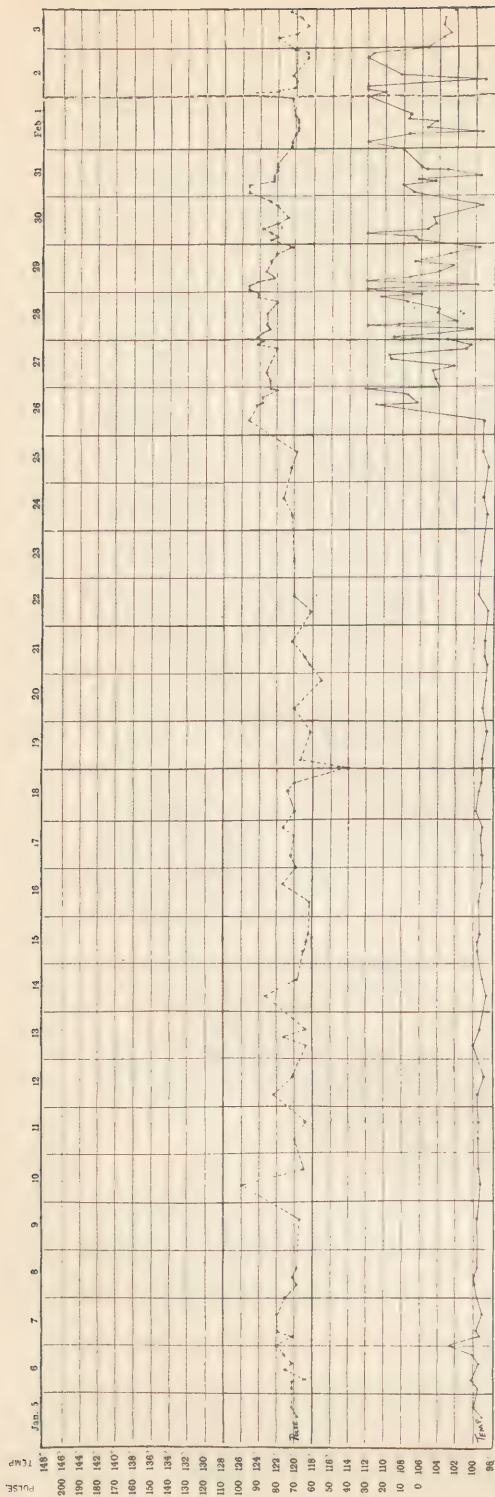
Again there was, after this, a period of moodiness and the exhibits of violent temper, so that no temperatures were taken. In the early morning hours of January 13th he stole away from the hospital. Many weeks afterward he appeared at my residence, but left before I could see him. Since I was told he had again applied for and gained admission to the Long Island Hospital, but I was unable to verify this report.

Temperatures, unless otherwise marked, taken in the rectum.

" marked P., taken in the urethra.

“ “ Ax. “ “ axilla.

“ “ K., “ “ popliteal space.



The symptoms of this thoroughly hysterical man—all the patients on whom abnormally high temperatures were noticed were women, with the exception of the case of Mr. Davis, in which the highest temperature was 112° F.—and observations made were about as follows:

Spasmodic contraction ;
Slight chills ;
Fainting-spells ;
Irregular respiration ;
Trembling of extremities ;
Chills followed by spasm, contractures, and fainting ;
Chills followed by perspiration ;
Languor, weariness ;
Expectoration of blood ;
Feels good ;
Pain in back ;
Buzzing in ears ;
Palpitations ;
Fear ;
Groaning ;
Hoarse voice ;
Weak pulse, cold perspiration ;
Loss of control of tongue and lower jaw ;
Amblyopia half an hour ;
Tongue very dry, immovable, could not speak for three hours ;
Choking-spells ;
Cyanosis ;
Right eye counts fingers at four inches, cannot see with left ;
Hears well with right ear, not at all with left ;
Lower jaw fixed ;
Diaphragm fixed ; cyanosis to blackness.

In another attack of the same kind uses accessory muscles of respiration, and requests that his arms be elevated, as he can breathe better in that posture ;

Crying-spell ;
Paleness ;
Tonic spasms ;
Tongue, gums, uvula, and mouth not sensitive to touch ;

Water poured into his mouth does not cause attempts at swallowing, but occasions coughing and interferes with respiration ;

Photophobia ;

Footsteps or moving a paper annoys him ; screams ; puts his hands to his ears ;

Pupils contracted ;

Intense thirst ;

Pain in side ;

Laughs and talks ;

Indulges in poetry directed to wife ;

Apathy ;

Twitching in left cheek ;

Chronic contractions followed by tonic of the whole body ;

Grinding of teeth ;

Wakes up with a start, points to the ceiling ;

Pain in back of head ;

Mouth and eyes closed ;

Delirium ;

Inarticulate sounds ;

Pain in abdomen ;

Hungry ;

Tongue swollen ;

Trismus ;

Perspiration of head and lower extremities, while body dry ;

Forehead, chest, and lower extremities cold, while arms perspire ;

Convergent strabismus ;

Pain in spine, neck, temples, and jaw ;

Chronic spasm of muscles of jaw ;

Unconsciousness ;

Asks for morphine to sleep, sleeps without it ;

Pulse regular, full ;

Movements of deglutition ;

Abdominal wall in tonic contraction ;

Hates the day-nurse, who is skeptical, and has no attacks in six days ; has them after the night-nurse comes on, who takes elaborate notes, which the patient is allowed to read ;

Has cataleptic spasms after having been told what the visiting physician expects of him ;

Conscious during temperatures of 117° and 132° ;

Pulse very irregular, while but slightly increased in frequency;

Difficulty in passing urine;

Loss of memory complained of;

Frothing of mouth tinged with blood. Is stopped after he heard one nurse telling the other that such things were often done by biting the lips;

Loss of speech temporary;

Refuses temperature-taking for days;

Is sometimes violent and unmanageable;

Is up and about;

Means to have his skeptical nurse discharged;

Violent during an attack of contractions and unconsciousness which began with temperature of 118° at 7.15 P.M., followed at 7.50 P.M., immediately after the attack, by 98.4° ;

Pulse strong and full, followed by irregularity, while frequency the same. Pulse very rarely affected by temperature. Respiration sometimes shallow and more frequent than pulse, but not in proportion to temperature;

Pain about heart;

Burning sensation inside of body;

Perfectly conscious at 123° , with respiration 58 and pulse 86;

Tickling in nose and ears without reaction;

Irrational.

Temperatures taken in different parts of the body do not always exhibit a normal relation to each other, or to pulse and temperature.

February 24th, 7 A.M. Temp. R. 112° , urethra 111.2° ; 7.30 A.M. R. 128.5° , ax. 117° ; 8 A.M. penis 113° , P. 108, R. 54; 9.45 A.M. R. 135° , P. 105, R. 45, during this temperature head flushed, twitching, cataleptic attack; 10 A.M. 107.4° ; 12 M. 99.8° ; 2 P.M. 118.4° ; 4.15 P.M. R. 135° , P. 106, R. 45, ax. 117° .

During a temperature of 127.2° , pulse 96, respiration 108 at 9 P.M., an hour later 136° , 45 R., P. 105.

Perspiration, during 116.5° , respiration 40, pulse 68, limited to chest, arms, and hands, flexor side of knees, and axilla.

Intense redness of neck, head, and upper part of trunk, during temperature of 125° R., 123° ax.

Difference between R. and Ax. temperature 6° (124° — 118°).

Nine observations made March 5th: Lowest temperature 112.6° , highest 148° ; lowest number of respirations 36, highest 72; lowest pulse 68, highest 96; at 148° , R. 72, P. 68; on the following day at the same temperature R. 60, P. 72. This time he was unconscious. March 8th at 4 A.M., temperature 148° , R. 68, P. 72, with pain in back of neck and on left side, unconscious. Face flushed, mouth half open, tongue protruding, extremities tremble; when again conscious was very thirsty.

From March 5th to 9th thirty-four temperatures were taken, all in the rectum, with the exception of two in the axilla, and one in the popliteal space. These temperatures ran as follow: 109.8° , 111.8° , 112.6° , 112.8° , 113° , 113.2° , 114.4° , 115° , 115.8° twice, 116° four times, 117° , 118° , 119° , 119.2° , 120.6° , 121.8° , 124° , 125° , 127° twice, 132° twice, 133.4° , 135° twice, 136° , 137° , 142° twice, 143.8° , 148° twice.

The absence of any dependence of pulse and respiration on these temperatures is proven by the following figures:

Temperature.	Respiration.	Pulse.
109.8°	44	100
112.6	40	84
116	40	72
124	48	90
132	50	84
137	64	68
142	48	84
148	68	72
148	72	68

The rapid changes of the temperature at sometimes have been alluded to, but the persistence of high temperatures during five days, averaging much more than 120° , through a period of five days, is still more remarkable. The alternation in the man's other symptoms is very striking, nervous disorders, such as hallucinations, fainting spells, contracted pupils, contractures, being noted at low and high temperatures. Meanwhile the urine was not much affected. Micturition was sometimes difficult, but the composition and gravity of his urine, often inspected, sometimes examined, exhibited no particular anomalies.

Unfortunately the temperature of the urine was not taken. His sleep was mostly good, sometimes long, appetite usually good, and

there was no emaciation. Evidently the action of the nervous system uncombined with that of a toxin, and its effect on the heat-centre or centres, or on the inhibition-centre, does not interfere with the performance of the functions of the organs superseding digestion, assimilation, and elimination. The probability is that such a case as described by me points to high temperatures being caused rather by a paralysis of the inhibitory faculty, such as was suggested by H. C. Wood, than by a direct influence on the heat-producing centres.

